

REMARKS

Claims 1, 4-8, 10-18 and 20-24 are pending in the present application.

Claims 1, 4 and 10 have been amended.

No new matter has been added as a result of the amendments.

All claims are believed to be in condition for allowance for the reasons set forth herein.

Claim Objections

Claims 1 and 10 are objected to because of formalities. Each claim has been amended thereby rendering the objection moot.

Rejections under 35 U.S.C. § 112

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Claim 10 has been amended thereby rendering the rejection moot.

Rejections under 35 U.S.C. § 103

Claims 1-2, 6-8, 10, 16 and 20-24 are rejected under 35 U.S.C. 103 as being unpatentable over Kawano et al. in view of Santo et al.

Claim 2 is cancelled and all rejections directed thereto are moot.

Kawano et al. is cited as teaching the invention. As noted by the Office Kawano et al. fails to recite silanol modified PVA and Santo et al. is relied on for those teachings which are otherwise not provided by Kawano et al. In summary, the Office opines that it would have been obvious to one of skill in the art to have modified the ink jet media of Kawano et al. to use silanol modified PVA because Kawano et al. suggests that modified PVA is conventional and Santo et al. teaches modified PVA serves ecology purposes.

Applicants respectfully submit that this is a hindsight reconstruction based only on the teachings of the present application and, even then, would lead one of skill in the art away from the claimed invention.

Santo et al. teaches at col. 10, lines 5-8 that when the binder is a water soluble polymer it is used in combination with alumina hydrate. Santo et al. further teaches at col. 8 lines 61-65 that the pigments used should be less than 50% by weight otherwise the effects according to the invention can not be expected. Taken in context Santo et al. clearly teaches that the untreated pigment is less than 50% by weight and the balance would preferably be alumina hydrate to achieve the ecology advantages cited by the Office.

In contrast, present claim 1 specifically recites that the pigment consist essentially of porous inorganic silica. One of skill in the art would not combine the teachings of Santo et al. with regards to the silanol modified polyvinyl alcohol while at the same time excluding the necessity of less than 50% by weight untreated pigment. It is only in hindsight that one of skill in the art would add a single ingredient to achieve a benefit that is only achieved if a co-ingredient is added therewith.

In summary, the Office has selected a single ingredient from Santo et al. for incorporation into Kawano et al. to achieve some non-descript ecological advantage. This result is only achieved if the co-component is also included. Therefore, even if this combination were made the invention of claim 1 would not be achieved. Furthermore, one of skill in the art would not arrive at the claimed invention since the advantage offered by the combination of silanol modified PVA and the co-component would be eliminated long before reaching a pigment which consist essentially of porous inorganic silica.

Claims 6-8, 10, 16 and 20-24 ultimately depend from claim 1. Each claim has the limitation of a pigment consisting essentially of porous inorganic silica incorporated therein by

dependence from claim 1. Each claim is therefore patentable for, at least, the same reasons as claim 1.

The rejection of claims 1-2, 6-8, 10, 16 and 20-24 under 35 U.S.C. 103 as being unpatentable over Kawano et al. in view of Santo et al. is traversed since the combination is a hindsight reconstruction which, even then, fails to teach the claimed invention.

Claims 1, 4-8, 10, 16-18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Shaw-Klein et al. (SK).

Kawano et al. is cited as teaching the invention. As noted by the Office Kawano et al. fails to recite silanol modified PVA and SK is relied on for those teachings which are otherwise not provided by Kawano et al. In summary, the Office opines that it would have been obvious to one of skill in the art to have modified the ink jet media of Kawano et al. to use silanol modified PVA because Kawano et al. suggests that modified PVA is conventional and SK teaches enhanced water resistance.

The teachings of SK have been taken out of context. SK does recite silanol modified PVA in the recording media as stated by the Office. However, SK does not utilize silica in

the media. The silica is in the ink. Only after the ink is printed onto the media is there any enhancement in water resistance and abrasion resistance and, even then, these advantages are realized in the printed product not the unprinted media.

It is clear from the teachings of SK that a reaction occurs (cross-linking) between the ink and the receiving media. Clearly, this reaction involves a previously prepared ink receiving layer and an ink wherein the ink comprises silica. This is clearly distinct from an ink receiving layer comprising the silica.

The Office has improperly utilized hindsight reconstruction to extract some elements of an ink receiving layer and other elements from an ink to arrive at the composition of the present ink receiving layer. This is improper.

Assuming, arguendo, that one of skill in the art did consider the hindsight reconstruction presented by the Office. Clearly, there is a chemical reaction between the ink and receiving layer wherein functional groups of the ink receiving layer react with the silica particles to form an adhered layer. If the silica were incorporated directly into the ink receiving layer the artisan would expect that at least some of those reactive function groups would be reacted thereby

decreasing the number of functional groups available to react with, and adhere, an ink. Therefore, one of skill in the art would contemplate SK and be led away from incorporating the silica in the ink receiving layer since the number of functional sites would necessarily be depleted.

In summary, the Office has developed a composition based solely on hindsight which is in direct contradiction to the references relied upon. A rejection based on such a contrary teaching is improper and removal is respectfully requested.

The rejection of claims 1, 4-8, 10, 16-18 and 20-24 under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Shaw-Klein et al. (SK) is traversed as being based on impermissible hindsight which, even then, is directly contradicted by the references combined to form the hindsight reconstruction.

Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Shaw-Klein et al. (SK) in view of Mochizuki et al. and further in view of USPN 6,022,440 to Nordeen et al.

Claims 11-15 ultimately depend from claim 1 and all limitations of claim 1 are incorporated therein through dependence.

Kawano et al. and SK are cited as above and all comments directed thereto are equally applicable here. In summary, Kawano et al. and SK teach against the claimed invention due to the expected depletion of reactive functional groups in the ink receiving layer if the silica is incorporated therein instead of in the ink.

The Office notes that Kawano et al. and SK are also silent with regards to an adhesive polymer layer disposed between the support and ink receiving layer. Mochizuki and Nordeen are cited as teaching the adhesive polymer layers which are otherwise lacking.

Even with the teachings of Mochizuki and Nordeen the deficiencies of the primary references are neither removed nor mitigated. Neither Mochizuki nor Nordeen taken independently or together provide any teachings which would lead one of skill in the art to ignore the teachings of SK and remove the silica from the ink for incorporation into the ink receiving layer. Mochizuki and Nordeen do not provide any teachings which would avoid the problem associated with depleting the reactive groups in the media and therefore the problems created by the hindsight reconstruction remains.

The rejection of claims 11-15 under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Shaw-Klein et

al. (SK) in view of Mochizuki et al. and further in view of USPN 6,022,440 to Nordeen et al. is traversed.

Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Santo et al. in view of Mochizuki et al. and further in view of USPN 6,022,440 to Nordeen et al.

Claims 11-15 ultimately depend from claim 1 and all limitations of claim 1 are incorporated therein through dependence.

Kawano et al. and Santo et al. are cited as above and all comments directed thereto are equally applicable here. In summary, Santo et al. teaches against an ink jet receiving layer consisting essentially of porous inorganic silica.

The Office notes that Kawano et al. and Santo et al. are also silent with regards to an adhesive polymer layer disposed between the support and ink receiving layer. Mochizuki and Nordeen are cited as teaching the adhesive polymer layers which are otherwise lacking.

Even with the teachings of Mochizuki and Nordeen the deficiencies of the primary references are neither removed nor mitigated. Neither Mochizuki nor Nordeen taken independently or together provide any teachings which would lead one of skill in the art to ignore the teachings of Santo et al. and

increase the pigment beyond the level wherein the advantages of the silinol modified PVA are realized. One of skill in the art would be directed away from the claimed invention due to the expected loss of any advantage otherwise provided by the silanol modified PVA.

The rejection of claims 11-15 under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Santo et al. in view of Mochizuki et al. and further in view of USPN 6,022,440 to Nordeen et al. is traversed.

Claims 10 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Santo et al., and alternatively in view of SK and further in view of Mukoyoshi.

Claims 10 and 23 ultimately depend from claim 1 and have all limitations of claim 1 included therein by dependence.

Kawano et al., Santo et al. and SK have been discussed above and comments presented therein are equally relevant here.

As stated above Santo et al. teaches that the amount of untreated pigment should not exceed 50% by weight. In further extension of this teaching SK teaches that silica, an untreated pigment, is best incorporated into the ink not the ink receiving layer. The teachings combined would lead one of

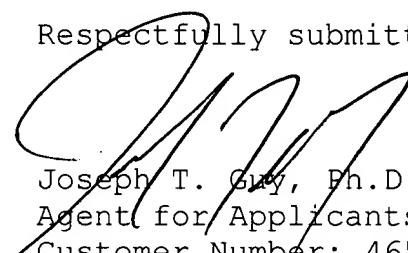
skill in the art to minimize the amount of porous inorganic silica in the ink receiving layer in favor of incorporating it into the ink. This is directly contrary to the presently claimed invention wherein the ink receiving layer comprises a pigment which consist essentially of porous inorganic silica.

Mukoyoshi is cited as teaching amorphous silica, styrene-butadiene copolymer and epichlorohydrin-dimethylamine copolymer. Mukoyoshi is silent with regards to any teaching which would contradict the combined teachings of Santo et al. and SK, particularly, with regards to the distribution of silica.

The rejection of claims 10 and 23 under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Santo et al., and alternatively in view of SK and further in view of Mukoyoshi is traversed.

CONCLUSIONS

All claims are believed to be in condition for allowance. Notice thereof is respectfully requested.

Respectfully submitted,

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